

ABILENE REFLECTOR

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THE LITTLE GRAVE.

There's a spot on the hillside far away,
Where in summer the grass grows green;
Where, beneath a rustling elm tree's shade,
A moss-covered stone is seen.
This a quiet and unmarked spot,
A solitude lone and wild,
Yes—somebody's hopes are buried there—
The grave of a little child.
In winter, alas! that mossy stone
Is hid beneath a shroud of snow;
But around it, in springtime, fresh and sweet,
The daisies and violets grow;
And over it the summer breezes blow,
With a fragrance soft and mild,
And the autumn's dew-laden leaves the thickly strewn
That grave of a little child.
And every year there a red-bud comes,
When the month of May is bright,
And builds her nest in this quiet spot,
Mid the elm tree's branches high;
With her melody sweet by the hour she trills,
As if by the scene beguiled;
Perhaps—who knows? 'tis an angel come
To the grave of that little child.
Yes, somebody's hopes are buried there,
Some mother is weeping in vain,
For, though years may come and years may go,
'Twill never come back again.
Yet blessed are those who die in youth,
The pure and the undecayed,
Some road to Heaven, perchance, runs through
That grave of a little child.

ANIMALS AND SOIL.

The Wonderful and Useful Work Done by Ants.

What It Accomplished by Crayfish, Field Mice, Bugs, Etc.—But the Ants, in Many Districts, Are the Most Important Agents.

The admirable studies of Mr. Darwin on the influence of the earth-worms upon the soil has made it clear that these animals exercise a most important effect in its preparation for the use of plants. Mr. Darwin's luminous essay has served to call attention to the effect of organic life on the development of the soil-coating. In the following pages I propose to submit the results of some studies of a general nature, which serve to show that a number of other animals have a considerable influence on the preparation of soils.

Our soils, as is well known, depend upon a variety of actions which serve to break up the rocky matter of the earth and to commingle that matter with organic materials more rapidly than the erosive agents can remove the detritus from the point at or near which it decays. For the formation of the soil two actions at least are essential. First, the bed-rock must be broken into fragments sufficiently separated from each other to permit the passage of roots between them; second, the rock fragments must be still further comminuted and commingled with organic waste to make the combination of organic and inorganic matter on which the utility of the soil absolutely depends. Although the earth-worms are undoubtedly very important agents in overturning and breaking up of soil, it appears to me that they are most effective in the tilled fields or in the natural and artificial grass-lands. So far as I have been able to observe, these creatures are rarely found in our ordinary forests where a thick layer of leaf-mold, commingled with branches, lies upon the earth. The character of this deposit is such that the creatures are not competent to make their way through it, and they therefore in the main avoid such situations. Moreover, wherever the soil is of a very sandy nature, earth-worms are scantily found if they are present at all. These worms are practically limited to the soils of a somewhat clayey character, which have no coating of decayed vegetation upon them.

As the greater portion of the existing soil has been produced in forest regions, I shall first examine the action of various animals upon the soils of wooded countries. The mammals are, of all our vertebrates, the most effective in their action upon the soil of forests. Twenty species, or more, of our American mammals are burrowers in the forest bed. They either make their habitations beneath the ground or resort to it in the pursuit of food. Of these our burrowing rodents are perhaps the most effective, but a large number of other small mammals resort to the earth and make considerable excavations. In forming their burrows, or in the pursuit of other burrowing animals, these creatures often penetrate through the whole or greater portion of the soil-covering. The material which is withdrawn from the burrow is accumulated about its mouth. The result is the overturning of a considerable amount of the earth and a consequent commingling of the material with vegetable matter. When brought to the surface and left exposed to the action of frost the breaking up of the material is greatly favored, and thus the formation of the soil is facilitated.

Considerable as is the effect of burrowing mammals, the principal overturning of the earth in our primeval forests is accomplished by the invertebrate animals. Where the woods are not very dense, and particularly where the soil is somewhat sandy, our largest species of ants are very effective agents in working over the soil. Their burrows extend to the depth of some feet below the surface, and each hill brings to the air several cubic feet of excavated matter, which, as slight inspection shows, is much commingled with vegetable matter. Wherever these ant-hills abound they commonly exist to the number of a score or more on each acre, and the occupants of each hill, in many cases, bring as much as a cubic foot of matter to the surface in the course of a single year. The action of rain constantly operates to diffuse this material on every side of the hill. We may often observe a thin layer of sediment extending for a considerable distance from the elevation.

As is well known to all those who have inspected the soil within virgin forests, the earth is occupied by a host of larval insects, principally belonging to the group of beetles, but including also many orthopteran insects. These creatures in the course of their life underground displace a good deal of soil, a portion of which is thrown upon the

surface, the greater part, however, being merely dislodged beneath the surface. The effect, however, is to commingle and to break up the soil, and thus favor its commination. Although the roots of trees do by far the larger part of the ridding which is accomplished in the soil layer, they do not bring about much commingling of the soil. The thrusts which they apply to shear the materials about, and so to a certain extent mix them, but by far the larger part of the commingling is effected by the animal life which dwells beneath the forest bed.

Where the woods are wet and favor the development of the crayfish the effect of this group of animals on the overturning of the soil is extremely great. It probably exceeds that which is accomplished in our ordinary fields by the action of the earth-worms. A single crayfish will often bring in the course of a single season's activity not less than half a cubic foot of earthy matter to the surface. In certain districts where these animals abound there appear to be not less than a thousand to each acre of surface. If such be their number, it is evident that not less than five hundred cubic feet of matter is brought to the surface from a considerable depth in the course of a year. As this matter is generally of a rather fine nature and easily dissolved in water, it rapidly washes away and forms a thin sheet on the surface. I am inclined to believe that large areas of our wet woods and the open border lands along our streams are completely overturned to the depth of two feet or more in the course of half a century by the actions of these animals. It is not impossible, indeed, that the very fine division of the soil which characterizes the regions inhabited by these creatures may be in good part due to their action. In this manner the creatures may have in part worked to bring about the very conditions which best serve their needs. "In open grounds, in natural prairies or grass-plains, the smaller species of ants are extremely effective agents in overturning the spoils. Wherever the ground remains for some time unplowed, it becomes occupied by these creatures. In the sandy soils of Eastern Massachusetts, the overturning accomplished by these creatures assumes a geological importance. For many years I have been puzzled by the fact that the glacial terraces and plains of this region were extensively covered to the depth of a foot or more by a coating of fine sand and very small pebbles, while below the depth of a foot pebbles of larger size are very numerous and the spaces between them but imperfectly occupied with any material. It is obviously impossible to explain these conditions through the action of earth-worms, for the reason that these creatures are rarely found in soils of this description. From much observation I have become convinced that this coating of sandy material is to a great extent to be explained by the action of various species of ants, in the forest condition by the work of the larger black ants, and in the condition of open plains by that of the smaller species.

The amount of material which these creatures bring to the surface in a single season is surprising. At several points in Eastern Massachusetts I have found the surface to contain at least one ant-hill to each square foot of area, or about forty thousand hills to the acre. This is probably an exceptionally great number; but it perhaps is safer to estimate the number at twenty thousand to the acre. The incoherent heaps of excavated matters which these creatures form are quickly washed away by the rain, or in many cases are blown away by strong winds, and so scattered over the surface. As soon as destroyed they are, in most cases, rebuilt, the result being that a single hill is reconstructed at least half a dozen times during the season. I have estimated that the amount of material brought to the surface often exceeds three cubic inches to each square foot of surface in a single year, or about a fifth of an inch of the whole area each year. Thus, in the term of fifty years, the accumulation of material on the surface would amount to as much as an inch and, reckoning the soil as having an average depth of one foot, a total overturning would be accomplished in less than one thousand years. It is likely that in some cases, over considerable areas, a tolerably complete overturning is brought about in less than a quarter of this time.

The effect of this action of ants on the soil material is peculiar. The tendency is like that noted by Dr. Darwin in the case of earth-worms to bring the finer particles to the surface. I am inclined to think that the ants accomplish this part of their work even more effectively than the earth-worms, for the reason that they penetrate more deeply between the stones than their less active associates. Like the earth-worms, but in larger measure, the ants convey considerable amounts of organic matter into the soil. Their winter store of food is deeply buried, and much of it remains unconsumed in the nether earth. There is thus a constant innatuation of vegetable matter beneath the materials which they bring to the surface.

Although the burrowing vertebrates operate most vigorously in the forest-covered regions, they also exercise a certain influence on the open country. The moles, which work only here and there in the forest, are conspicuous agents in overturning the soil in the grassed regions. Still, as this group is peculiarly limited in its distribution and rarely penetrates to more than four or five inches below the surface, it exercises a relatively small effect. The field-mice are more potent agents in effecting the character of the soil. Their dwelling-chambers are at a considerable depth below the surface, and in forming them, they bring a certain amount of matter to the open air. Moreover, the remains of their food, as well as their excrements, are important contributions to the organic matter of the soil. Insects in their larval stage exercise a less effect in the open field than in the forest-covered regions; still they are not to be left out of account in considering the process of soil-making in such areas. In Europe the rabbit, which has a habit of burrowing to a considerable depth, and in certain dis-

tricts west of the Mississippi, the prairie dogs overturn the soil on the areas they occupy with considerable rapidity. Still as the number of these creatures in any given district is not great, their influence is mostly exercised in a very local way.

The foregoing considerations make it tolerably clear that our ants are, in some districts, by far the most important agents in overturning the soil and in commingling the superficial organic matter with the mineral material of which it is composed. Although on a field of a certain class, those which are of a clayey nature, the earth-worms are probably more efficient soil-makers than the ants, this latter group appears to be, at least in the eastern part of North America, on the whole, by far the most effective in the preparation of the soil for the needs of plants. They do not, it is true, take the soil into their bodies, and thus disintegrate it, as the earth-worms do, but they accomplish what is perhaps the more important task of rapidly overturning the soil-material, as well within the forests as in the open fields, wherever that material is of a sandy nature.—*Popular Science Monthly.*

WAS ACCOMMODATING.

A Genuine Tennessee Mountain After-Dinner Appetizer.

A weary traveler stopped at a East-side clapboard store, among the Tennessee mountains, and addressing an old fellow who nodded at him, said: "My dear sir, I am exceedingly hungry, having ridden all day without any thing to eat. What have you got?" "Well, I dunno. Ain't took stock lately."

"Got some cheese, havn't you?" "Did have some, finest you ever seed, but the rats got a foul ur hit."

"You surely have crackers?" "Did have 'bout er half box ov er the finest crackers in this yer country, but my ole hen got ter layin' in the box, an' now she's a-settin' on the sige an' has got sich a good start that I don't want ter interfere with her."

"Very singular." "Don't know that it is, fur I've kep' 'er fur er good while, an' I have noticed that a hen would rather git in a box an' lay on the crackers than putty nigh anywhere else. Seems like she kin lay better. 'Pears ter be suthin' erbout the crackers that inspires her."

"You have some dried herrings, I suppose." "Yes, some of the finest I ever seed, but you see, the cat has got in the habit of draggin' 'em over the flo' at night. She chaws a little bit on one an' then on another, an' has made some of 'em look sorter wasted, still, ef you think you ken find one that's above suspicion, w'y, go 'round that an' he'p yo'self."

"I don't care to take any chances." "Jest ez well not, I reckon, fur the flo' ain't so mighty clean an' I'm putty sartin' that she'd drag the most ov them fish around even ef she hain't nibbled at 'em much."

"Have you got any fresh eggs?" "Well, I did have some ov the freshest I ever seed, but I wouldn't like to risk 'em now."

"Great goodness, can't you give me something?" "Thar's a middlin' ur meat over thar. You might cut you of a few slices and brile 'em here on the coals."

"I thank you for the suggestion." The traveler cut off several slices of meat and soon had them broiled. After satisfying his hunger, he said: "I don't know what I should have done had it not been for that bacon." "Comes in mighty handy when a feller's sorter hungry."

REVENGE IS SWEET.

How a Counter Gentleman and Saleslady Rebuked Their Employer.

The cold, haughty, purse-proud merchant prince who treats his ribbon counter gentleman and gentlemen's underwear salesladies with mere civility or chilling indifference had better beware. The time may come when their positions may be reversed.

"See here, Jinks," said one of these arrogant millionaires one day to a ninety-pound ribbon counter clerk, "you want to attend to your business better, young man, and not waste so much of your time flirting with that red-headed underwear girl across the aisle, mind that."

PUNGENT PARAGRAPHS.

"Water will always find its level, but as a leveler it can't stay in the same class as whisky."—*Philadelphia Call.*

"Yes, sir," said Popinjay, emphatically. "Graball is a man of limited means, but unlimited meanness."—*Durington Free Press.*

A Denver man has been arrested for stealing three boxes of cigars of the value of eighty-three cents a box. The defense will be insanity.—*Life.*

The editor who saw a lady making for the only seat in the street-car found himself "crowded out" to make room for "more interesting matter."

First burglar—"Hello, Bill; get any swag?" Second burglar—"This bag full." "Anti-poverty bureau. I guess; leastways there was lots in the drawers."—*New Haven News.*

"You were severely wounded at Gettysburg, I believe?" "Let's see; I believe I was." "Believed. Don't you remember it?" "Not distinctly." "How's that?" "I've been married ever since the war."—*Lincoln Journal.*

Solemn man—"No, sir, I never fish. I think it is decidedly wrong." Chippy-nome—"Don't like to be so cruel to the fish?" Solemn man—"No, I don't mind hurting the fish, but I think it is wrong to lie."—*Texas Colonel.*

"I don't wish to say any thing against the individual in question," said a very polite gentleman, "but would merely remark in the language of the poet, 'that to him truth is stranger than fiction.'"

A sister always gets a good deal of attention for about a week after her brother has been jilted by the only girl he could ever love. It takes him just about so long to find out that he could love some other girl.—*Somerville Journal.*

"Why did you strike the plaintiff?" was asked of a prisoner in the police court the other day. "Because he said I was no gentleman." "Well, are you a gentleman?" "I don't suppose I am, sir; but it made me mad to be told of it, all the same."—*Detroit Free Press.*

SCIENCE AND INDUSTRY.

New silk mills are springing up everywhere, and the immigration of foreign weavers has almost stopped.

Careful experiments have shown that waste silk is the most effective of all non-conducting coverings for steam-pipes, and the demand for this purpose is great in spite of the cost.

The values of the exports of mineral oils from the United States for the year ended December 31, 1887, showed a decrease of \$2,584,977 from the values of the corresponding period of 1886.

The process of manufacturing gas from water at Los Angeles, Cal., is a magnificent success. Its bright, steady light has been pronounced a decided improvement over electricity.

A simple formula for the preparation of hektograph ink is given by a competent authority. Take one part of aniline, of the color desired, dissolve in about seven parts of water, and add one part of glycerine.

Meteorites sometimes attain a velocity of 180,000 feet per second. When passing through the air at this rate the friction is so great that the air is heated up to a temperature of 10,800 degrees Fahrenheit.

The French national printing office employs girls as type-founders, printers, book-sewers, book-binders, etc., the wages ranging from fifty cents to one dollar per day. After thirty years' service both men and women are retired upon a pension.

As a wood preservative naphthalene is now largely used in Scotland, its action being to destroy all albuminoid compounds in the wood, leaving it dry and clean to handle, and with only a faint, aromatic smell. The naphthalene is melted in a vessel capable of being tightly sealed, and in this the wood is saturated.

Extensive use is now being made in France of the unique article known as wood wool, consisting of extremely thin and slender shavings of wood, that are comparable to paper cut for packing. It weighs some forty or fifty per cent less than the materials generally used for such a purpose, and its beautiful appearance, fineness, and exceeding cleanness have brought it into great favor.

A recent chemical examination of several prominent brands of "family lard" showed them to be variously constituted of different ingredients, and in one case not a trace of real lard could be found in the sample analyzed. A prominent lard manufacturer testified before the Senate Committee on Agriculture, at Washington, that so far as he knew the lard thus manufactured is more popular with the people than the genuine article is.

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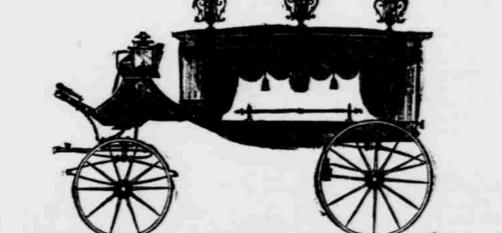
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